TWO ADDITIONS TO THE FLORA OF OKLAHOMA AND NOTES ON *XYRIS JUPICAI* (XYRIDACEAE) IN OKLAHOMA

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ABSTRACT

Eleocharis flavescens and *Rhynchospora scirpoides* are reported as new to Oklahoma. *Xyris jupicai,* which has been mentioned as occurring in Oklahoma, is documented in the state by citation of voucher specimens. The overall distribution of these species in the West Gulf Coastal Plain is discussed.

KEY WORDS: Cyperaceae, Xyridaceae, *Eleocharis*, *Rhynchospora*, *Xyris*, Oklahoma.

Eleocharis flavescens and *Rhynchospora scirpoides* are not cited as occurring in Oklahoma by Taylor and Taylor (1994) and the Oklahoma Vascular Plants Database (Hoagland et al. 2006), nor is either included as part of the Oklahoma flora by the applicable parts of the Flora of North America (Kral 2000a, Smith et al. 2000). Therefore, the records cited below constitute the first report of these species in the

state. *Xyris jupicai* is cited by Kral (2000b) as occurring in Oklahoma, but apparently the species has never been documented in the state by citation of a voucher specimen. It is not included as part of the Oklahoma flora by Taylor and Taylor (1994) or the Oklahoma Vascular Plants Database (Hoagland et al. 2006). The present paper documents the occurrence of this species at five locations in two counties.

Eleocharis flavescens (Poir.) Urban (Cyperaceae).

Voucher specimens: OKLAHOMA. **Choctaw Co.:** Hugo Bog, 4 mi. E of U.S. Hwy 70, 4 mi. N on U.S. Hwy 271 & 2 miles N of Soper, 8 Oct 1988, *Orzell & Bridges 8654* (BRIT, TEX); same location, 15 Aug 2006, *Singhurst & Bridges 14362* (BAYLU).

Eleocharis flavescens was collected at the Hugo Bog (also known as Soper Bog and Railroad Bog) southwest of Antlers in southeast Oklahoma in 1988 by Edwin Bridges and Steve Orzell, but was not reported as new to Oklahoma at that time. In August 2006, Bridges and Singhurst revisited the site and confirmed that this species was still present. This site is about 140 km north of the nearest known occurrence of *E. flavescens* in Franklin County, Texas (Turner et al. 2003).

This site consists of a hillside seepage bog with a blend of West Gulf Coastal Plain flora and Ozark fen flora, possibly the only known example with this floristic mixture in the West Gulf Coastal Plain. During the 2006 inventory of the bog, 120 vascular plant taxa were recorded (Bridges and Singhurst 2006) while 144 taxa have been recorded in a list combined from all visits. The site was dominated by *Andropogon glomeratus var. glomeratus*, *A. virginicus* var. *virginicus*, *Carex atlantica* subsp. *atlantica*, *Carex stricta*, *Eleocharis tortilis*, *Schoenoplectus americanus*, *Scleria verticillata*, *Sphagnum spp.*, *Rhynchospora capitellata*, *R. gracilenta*, *R. glomerata*, and *Rudbeckia fulgida*. Other herbaceous plants of interest include *Asclepias incarnata, Cinna arundinacea*, *Cirsium muticum*, *Coreopsis tripteris*, *Eryngium integrifolium*, *Fuirena squarrosa*, *Impatiens capensis*, *Lysimachia quadriflora*, *Melanthium virginicum*, *Mikania scandens*, *Oxypolis rigidior*, *Parnassia grandifolia*, *Rudbeckia subtomentosa,*

Scleria muehlenbergii, *Selaginella apoda*, *Spartina pectinata*, *Thalictrum dasycarpum*, *Veronicastrum virginicum*, and *Xyris torta*.

Within this seepage bog, *Eleocharis flavescens* is restricted to areas of deep, quaking, saturated muck with little vegetative cover. This is also a preferred microhabitat of this species in deep muck seepage bogs in the Post Oak Savanna region of Texas. *Eleocharis flavescens* infrequently occurs in marshy streamsides, pondshores, lakeshores, and other wet habitats in the Edwards Plateau, Pineywoods, and Coastal Prairie regions of Texas, and is widespread, though infrequent, throughout much of the temperate and tropical regions of the western hemisphere.

Rhynchospora scirpoides (Torr.) Griseb. (Cyperaceae)

Voucher specimens: OKLAHOMA. **Atoka Co.:** Boehler Seeps and Sandhills Preserve, Boehler Lake bog, 14 Aug 2006, *Singhurst & Bridges 14366* (BAYLU); Boehler Seeps and Sandhills Preserve, Hassel Lake Bog, 14 Aug 2006, *Singhurst & Bridges 14367* (BAYLU).

Rhynchospora scirpoides was discovered at two locations at Boehler Seeps and Sandhills Preserve in Atoka County, Oklahoma. The plants were found along lakeshore mud flats at the base of extensive seepage slope bogs at Boehler and Hassel Lakes. The species occurred mostly in small clumps of young seedlings, which suggests greater abundance during periods of low water when more non-vegetated shoreline is exposed. This location is approximately 220 km north of the nearest known location of the species reported by Turner et al. (2003) in Anderson County, Texas. However, there is also a specimen (*Orzell and Bridges 7991*, TEX) from Henderson County, Texas, which is slightly nearer to Oklahoma.

Associated flora include *Boehmeria cylindrica*, *Brasenia schreberi*, *Cyperus erythrorhizos*, *C. strigosus*, *Diodia virginiana*, *Dulichium arundinaceum*, *Eleocharis tortilis*, *Fimbristylis autumnalis*, *Hedyotis uniflora*, *Hydrocotyle ranunculoides*, *Hydrolea ovata*, *Hypericum mutilum*, *Juncus diffusissimus*, *Ludwigia sphaerocarpa*, *Nuphar lutea* subsp. *advena*, *Rhexia virginica*, *Sacciolepis striata*, *Sparganium americanum*, *Triadenum virginicum*, *Utricularia gibba*, *Xyris jupicai*, and *X. difformis*. The habitat and associates of

Rhynchospora scirpoides at these sites are rather similar to those reported in the northern Post Oak Savanna region of Texas (Orzell and Bridges 1989).

Rhynchospora scirpoides is relatively rare and habitat restricted throughout most of its range, primarily on the Atlantic and Gulf Coastal Plains and disjunct to sand deposits near the Great Lakes (Reznicek 1994). It is most commonly associated with Atlantic Coastal Plain pondshores and lakeshores with seasonal water level fluctuation, where it is seen mostly during low water periods. It has been more precisely considered a species of the "Organic Exposed Pond Bottom" vegetation zone on Long Island (Zaremba and Lamont 1993), which is amazingly similar to its Oklahoma habitat. Because of its prolific seed production (and documented seed banking, see Schneider 1994), it can be common in these habitats in certain seasons, as well as in nearby disturbed areas. It is listed as a rare plant in most states where it occurs (Orzell and Bridges 1989, Sorrie 1994).

Xyris jupicai L.C. Rich. (Xyridaceae)

Voucher specimens: OKLAHOMA. **Atoka Co.:** Boehler Seeps and Sandhills Preserve, Boehler Lake bog, 14 Aug 2006, *Singhurst and Bridges 14365* (BAYLU); **Pushmataha Co.:** 4.3 miles E of U. S. Hwy 271 and jct. of Hwy 3 at Antlers, S side of Hwy 3, 14 Aug 2006, *Singhurst & Bridges 14330* (BAYLU); 1.4 miles NW of jct. of Coffee Creek Road (NS412RD) and WD194 RD on Powers Ranch. Bog #1, 14 Aug 2006, *Singhurst & Bridges 14386* (BAYLU); Harrison/Doshier Bog, 5 miles W on Hwy 3 & 7, 1 mile S of Antlers, 13 Aug 2006, *Singhurst & Bridges 14404* (BAYLU); bog 5.5 mi W of Antlers, 1 Sep 1976, *Taylor 23385* (NLU).

In Atoka County, *Xyris jupicai* was found growing with *X. difformis* at Boehler Seeps and Sandhill Preserve in a low hillside seepage bog and wet sandy lakeshore. Other associated species included *Andropogon virginicus* var. *virginicus*, *Bartonia paniculata*, *Boehmeria cylindrica*, *Dichanthelium scoparium*, *Eleocharis tortilis*, *Fuirena squarrosa*, *Hedyotis uniflora*, *Helianthus angustifolius*, *Hypericum mutilum*, *Juncus diffusissimus*, *Linum striatum*, *Lobelia puberula*, *Lycopus rubellus*, *Rhexia virginica*, *Rhynchospora capitellata*, *R. glomerata*, *R. scirpoides*, *Sacciolepis striata*, and *Scleria*

muehlenbergii. In Pushmataha County, *X. jupicai* was located in hillside seepage bogs and along a highway right of way that has intercepted a low hillside seepage bog. At the right-of-way site, *Xyris jupicai* was located in moderately disturbed seepy sand supporting *Andropogon virginicus* var. *virginicus*, *Boehmeria cylindrica*, *Dichanthelium scoparium*, *Eleocharis tortilis*, *Fuirena squarrosa*, *Hedyotis uniflora*, *Hypericum mutilum*, *Juncus diffusissimus*, *Lobelia puberula*, *Lycopus rubellus*, *Rhexia virginica*, *R. glomerata*, and *Sacciolepis striata*.

The only mention of *Xyris jupicai* in Oklahoma is by Kral (2000b), who includes Oklahoma in the stated distribution and maps the species as occurring in the eastern part of the state. The species is not included in Waterfall (1966) or in Taylor and Taylor (1994). Furthermore, a search of the Vascular Plants of Oklahoma Database (Hoagland 2006), which includes data of specimens of *Xyris* from OCLA, OKL, and Oklahoma Panhandle State University (herbarium acronym not assigned), was also negative. The *Taylor 23385* specimen had been originally determined as *Xyris torta* Smith, but was annotated by Bridges in 1988 as *X. jupicai*.

Xyris jupicai is often confused with the sympatric *X. difformis* Chapman, which may have been the case in Oklahoma. The two species can be separated by the ridges of the scapes, those of *X. difformis* being scabrous, often wide and prominent, and those of *X. jupicai* being smooth and narrow. Additional characters that can be used to distinguish the two species include the perennial nature, ovoid to subglobose spikes, presence of red pigmentation on leaf sheaths or sheath bases, and more spreading leaves of *X. difformis*. *Xyris jupicai* (in temperate regions of North America) is typically annual (or rarely biennial), has narrowly ovoid to oblong spikes, lacks red pigmentation on leaf sheaths or sheath bases, and has more ascending leaves. Additional comments and keys to these species can be found in Kral (2000b) and Bridges and Orzell (2003).

Kral (2000b) cites *Xyris jupicai* as the most widely distributed of all New World xyrids and, at the same time, the most ecologically tolerant. He mentions that it is a frequent invader of disturbed or fallow open wetlands throughout its range. Some authors have suggested that this species may have been introduced to the United States from tropical America (Kral 1966, Godfrey and Wooten 1979, Wunderlin 1998). However, it is not listed as introduced in Kral (2000b).

The species is of fairly common occurrence in weedy or disturbed habitats (and some more natural habitats) in northeast, southeast, east-central (Post Oak Savanna region), and southern coastal Texas (Turner et al. 2003), Louisiana (Thomas and Allen 1993), and southern Arkansas (Smith 1988). It is also recorded in a few counties in the Ouachita Mountains and Coastal Plain regions of Arkansas (Smith 1988).

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